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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,179	GELLRICH ET AL.	
	Examiner	Art Unit	
	Christina Riddle	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-85 and 100-113* is/are pending in the application.

4a) Of the above claim(s) *75-78 and 81-85* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-74,79,80 and 100-113* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status

1. Acknowledgment is made of the amendment filed on 10/12/2010 which amended claims 39 and 67, cancelled claims 86-99, and added new claims 100-113. Claims 39-85 and 100-113 are currently pending with claims 75-78 and 81-85 withdrawn as being drawn to non-elected inventions.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 39, 40, 54, 55, 60-62, 65, 66, 100-108, and 111 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebinuma et al. (US PGPub 2001/0039126, Ebinuma hereinafter).

Regarding claim 39, Ebinuma discloses a holding device for an optical element (lenses 1 and 2, Figs. 1-3, 5, 7-9, and 11) in an objective (projection optical system 42, Figs. 4 and 10) having a mount that is connected (Figs. 1-3, 5, 7-9, and 11, supporting member 3) to the objective (Figs. 1-5, 7-9, and 11, supporting member 3 is connected to projection optical system 42) and at least indirectly to the optical element (Figs. 1-3, 5, 7-9, and 11, supporting member 3 is indirectly connected to lenses 1 and 2), there being arranged between the mount and the optical element a reinforcing element (Figs. 1-3, 5, 7-9, and 11, alloy member 11 and alloy member 21 (or supporting members) connect supporting member 3 to lenses 1 and 2 so that alloy members 11 and 21 are ring-shaped and support the surfaces of the lenses) whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element (paras. [0035], [0038], [0043], [0056], [0058], [0060], [0076], and [0079], the alloy members 11 and 21 have thermal expansion coefficients that are substantially identical to those of the lenses) and

the reinforcing element is positioned outside the optical path of the optical element (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are arranged outside of the optical path of the lenses 1 and 2 since they are arranged at the periphery of the lenses).

Regarding claim 40, Ebinuma discloses wherein a seal or gasket is arranged between the optical element and the reinforcing element (Figs. 5, and 7-9, an adhesive is arranged between the lenses and members 51).

Regarding claim 54, Ebinuma discloses wherein the reinforcing element and the optical element are connected to one another by bonding (paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are connected by adhesion and lens 2 is bonded to supporting member 21).

Regarding claim 55, Ebinuma discloses wherein the reinforcing element and the optical element are connected to one another by bonding (paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are connected by adhesion and lens 2 is bonded to supporting member 21).

Regarding claim 60, Ebinuma discloses wherein a seal or gasket is arranged between the mount and the reinforcing element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3).

Regarding claim 61, Ebinuma discloses wherein a seal or gasket is arranged between the mount and the reinforcing element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3).

Regarding claim 62, Ebinuma discloses wherein the seal or gasket is arranged in such a way that contact between the same and an immersion medium is avoided (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3 so that the lip of the supporting member 3 prevents contact of the elastic members with an immersion medium).

Regarding claim 65, Ebinuma discloses wherein the reinforcing element is fitted on the mount by a plurality of fastening elements (Figs. 1-3, 5, 7-9, and 11, multiple elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3 to attach members 11 and 21 to supporting member 3).

Regarding claim 66, Ebinuma discloses wherein the reinforcing element is fitted on the mount by a plurality of fastening elements (Figs. 1-3, 5, 7-9, and 11, multiple elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3 to attach members 11 and 21 to supporting member 3).

Regarding claim 100, Ebinuma discloses wherein the reinforcing element comprises an aperture (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are ring-shaped and include an opening).

Regarding claim 101, Ebinuma discloses wherein the reinforcing element comprises a structure configured as a ring (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are in the shape of a ring).

Regarding claim 102, Ebinuma discloses a connecting device between the reinforcing element and the optical element (Figs. 1-3, 5, 7-9, and 11 and paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are connected by adhesion and lens 2 is bonded to supporting member 21); and

a seal or gasket between the reinforcing element and the optical element (Figs. 5, and 7-9, an adhesive is arranged between the lenses and members 51).

Regarding claim 103, Ebinuma discloses a seal or gasket arranged between the mount and the reinforcing element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3).

Regarding claim 104, Ebinuma discloses a holding device for an optical element (lenses 1 and 2, Figs. 1-3, 5, 7-9, and 11) in an objective (projection optical system 42, Figs. 4 and 10) having a mount (Figs. 1-3, 5, 7-9, and 11, supporting member 3), the holding device comprising a reinforcing element arranged between the mount and the optical element (Figs. 1-3, 5, 7-9, and 11, alloy member 11 and alloy member 21 (or supporting members) connect supporting member 3 to lenses 1 and 2 so that alloy members 11 and 21 are ring-shaped and support the surfaces of the lenses), the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element (paras. [0035], [0038], [0043], [0056], [0058], [0060], [0076], and [0079], the alloy members 11 and 21 have thermal expansion coefficients that are substantially identical to those of the lenses); and

an aperture (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are ring-shaped and include an opening).

Regarding claim 105, Ebinuma discloses wherein the optical element is received over the aperture (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are ring-shaped and include an opening. Lenses 1 and 2 are positioned above the openings in the members 11 and 21).

Regarding claim 106, Ebinuma discloses wherein the reinforcing element comprises a structure configured as a ring (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are in the shape of a ring).

Regarding claim 107, Ebinuma discloses wherein the reinforcing element is positioned outside the optical path of the optical element (Figs. 1-3, 5, 7-9, and 11, members 11 and 21 are arranged outside of the optical path of the lenses 1 and 2 since they are arranged at the periphery of the lenses).

Regarding claim 108, Ebinuma discloses a holding device for an optical element (lenses 1 and 2, Figs. 1-3, 5, 7-9, and 11) in an objective (projection optical system 42, Figs. 4 and 10) having a mount (Figs. 1-3, 5, 7-9, and 11, supporting member 3), the holding device comprising a reinforcing element arranged between the mount and the optical element (Figs. 1-3, 5, 7-9, and 11, alloy member 11 and alloy member 21 (or supporting members) connect supporting member 3 to lenses 1 and 2 so that alloy members 11 and 21 are ring-shaped and support the surfaces of the lenses), the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element (paras. [0035], [0038], [0043], [0056], [0058], [0060], [0076], and [0079], the alloy members 11 and 21 have thermal expansion coefficients that are substantially identical to those of the lenses); and

a connecting device between the reinforcing element and the optical element (Figs. 1-3, 5, 7-9, and 11 and paras. [0035], [0039], [0063], and [0076], quartz lens 1

and lens supporting member 11 are connected by adhesion and lens 2 is bonded to supporting member 21); and

a seal or gasket between the reinforcing element and the optical element (Figs. 5, and 7-9, an adhesive is arranged between the lenses and members 51).

Regarding claim 111, Ebinuma discloses a holding device for an optical element (lenses 1 and 2, Figs. 1-3, 5, 7-9, and 11) in an objective (projection optical system 42, Figs. 4 and 10) having a mount (Figs. 1-3, 5, 7-9, and 11, supporting member 3), the holding device comprising a reinforcing element arranged between the mount and the optical element (Figs. 1-3, 5, 7-9, and 11, alloy member 11 and alloy member 21 (or supporting members) connect supporting member 3 to lenses 1 and 2 so that alloy members 11 and 21 are ring-shaped and support the surfaces of the lenses), the reinforcing element comprising:

a coefficient of thermal expansion that corresponds substantially to the coefficient of thermal expansion of the optical element (paras. [0035], [0038], [0043], [0056], [0058], [0060], [0076], and [0079], the alloy members 11 and 21 have thermal expansion coefficients that are substantially identical to those of the lenses); and

a seal or gasket between the mount and the reinforcing element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3).

5. Claims 73 and 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Schuster (US Patent No. 6,417,974).

Regarding claim 73, Shuster discloses an objective (objective 10, Fig. 6) having an optical element (last optical element 1, Fig. 6) and having a holding device for an optical element (last optical element 1, Figs. 1-6) in an objective (objection 10, Fig. 6) having a mount that is connected (Fig. 6, the mounts support the optical elements including optical element 2 and last optical element 1), on the one hand, to the objective (Fig. 6, the mounts are directly connecting the objective 10), and on the other hand, at least indirectly to the optical element (Fig. 6, last optical element 1 is connected to the mount through optical element 2), there being arranged between the mount and the optical element a reinforcing element (Figs. 1-6 and col. 3, lines 22-39, optical element 2 reinforces last optical element 1 since the lower surface of optical element 2 is shown to be supporting the upper surface of last optical element 1. Further, in Figs. 1-6, it is clear that optical element 2 supports last optical element 1 via other intervening materials such as thin layer 3 in Fig. 3. Col. 3, lines 22-39 disclose that there are two optical elements: optical element 1 and 2, that are connected to each other such that optical 2 reinforces optical 1) whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element (col. 3, lines 44-49 and 64-67 and col. 4, lines 1-3, last optical element 1 and optical element 2 are made of materials with substantially corresponding thermal expansion).

Regarding claim 74, Schuster discloses the objective as claimed in claim 73, which is a designed as a lithography objective (Fig. 6 and col. 3, lines 22-28, the objective is in a lithography apparatus).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims are 41-49, 51, 52, 56, 59, 71, 72, and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as applied to claims 39, 40, and 108 above, and further in view of Schuster (US Patent No. 6,417,974).

Regarding claims 41 and 42, Ebinuma does not appear to explicitly describe wherein the reinforcing element and the optical element are composed of the same material.

However, Schuster discloses wherein the reinforcing element and the optical element are composed of the same material (col. 3, lines 31-39, 44-49, and col. 3, line 64-col. 4, line 3, optical elements 1 and 2 are made of CaF2, MgF2, or NaF).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included composing the reinforcing element and the optical element of the same material as taught by Schuster in the holding device with the reinforcing element and the optical element as taught by Ebinuma since having the reinforcing element and the optical element composed of the same material is common in order to reduce the complexity of the holding device by reducing the number of materials required during the manufacture of the device as well as to improve the imaging capabilities of the optical element by reducing the mechanical stresses due to the

connection to the reinforcing element since both the optical element and the reinforcing element would have the same properties of stress and strain.

Regarding claim 43, Ebinuma as modified by Schuster discloses wherein the reinforcing element and the optical element consist of SiO2 (Ebinuma, Fig. 1 and para. [0035], lens 1 is made of quartz and, as modified by Schuster, the reinforcing element and the optical element are made of the same material).

Regarding claim 44, Ebinuma as modified by Schuster discloses wherein the reinforcing element and the optical element consist of CaF2 (Schuster, col. 3, lines 31-39, elements 1 and 2 are made of CaF2).

Regarding claims 45, 46, and 47, Ebinuma does not appear to explicitly describe wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

However, Schuster discloses wherein the optical element and the reinforcing element are connected to one another by a wrung connection (col. 3, lines 29-30, elements 1 and 2 are connected by wringing).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have connected the optical element to the reinforcing element by a wrung connection as taught by Schuster with the optical element and the reinforcing element in the holding device as taught by Ebinuma since connecting an optical element to a reinforcing element by a wrung connection is common in order to provide a stable and simple mount-free connection between the elements (col. 2, lines 20-26).

Regarding claim 48, Ebinuma as modified by Schuster discloses wherein the optical element and the reinforcing element in each case have substantially flat surfaces in the region of the wrung connection (Schuster, Figs. 2 and 3, elements 1 and 2 have flat surfaces in the region of their connection).

Regarding claim 49, Ebinuma as modified by Schuster discloses wherein the optical element and the reinforcing element in each case have spherical surfaces in the region of the wrung connection (Schuster, Fig. 6, elements 1 and 2 have spherical surfaces in the region of the wrung connection).

Regarding claim 51, Ebinuma as modified by Schuster discloses wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection (Schuster, Fig. 3 and col. 3, lines 47-49, a layer of SiO2 or Al2O3 is provided on wringing surface 4 of optical element 1).

Regarding claim 52, Ebinuma as modified by Schuster discloses wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection (Schuster, Fig. 3 and col. 3, lines 47-49, a layer of SiO2 or Al2O3 is provided on wringing surface 4 of optical element 1 and col. 29-30, elements 1 and 2 are connected by wringing) and wherein a seal or gasket is arranged between the optical element and the reinforcing element (Ebinuma, Figs. 5, and 7-9, an adhesive is arranged between the lenses and members 51).

Regarding claim 56, although Ebinuma discloses wherein the reinforcing element and the optical element are connected to one another by bonding (paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are

connected by adhesion and lens 2 is bonded to supporting member 21), Ebinuma does not appear to explicitly describe wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the bonding connection.

However, Schuster discloses wherein the optical element and the reinforcing element are connected to one another by bonding (col. 29-30, elements 1 and 2 are bonded by wringing) and wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the bonding connection (Fig. 3 and col. 3, lines 47-49, a layer of SiO2 or Al2O3 is provided near the bonding of elements 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a protective layer in the region of the bonding connection as taught by Schuster with the bonding connection between the reinforcing element and the optical element in the holding device as taught by Ebinuma since a protective layer in the region of the bonding connection is common in order to prevent damage to the optical element that would negatively impact imaging by the optical element.

Regarding claim 59, Ebinuma does not appear to explicitly describe wherein the optical element and the reinforcing element are designed in one piece.

However, Schuster discloses wherein the optical element and the reinforcing element are designed in one piece with one another (col. 3, line 64-col.4, line 3, elements 1 and 2 are connected together in one piece).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included designing the optical element and the reinforcing element in

one piece as taught by Schuster with the optical element and the reinforcing element in the holding device as taught by Ebinuma since having the optical element and the reinforcing element in one piece is common in order to simplify the construction of the holding device.

Regarding claims 71 and 72, Ebinuma does not appear to explicitly describe wherein the optical element is designed as a terminating element.

However, Schuster discloses wherein the optical element is designed as a terminating element (Fig. 6, last optical element 1 is the final optical element in the objective).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the optical element as a terminating element as taught by Schuster with the optical element and reinforcing element in the holding device as taught by Ebinuma since having the optical element as the terminating element is common in order to complete a projection optical system with a final element in which aberrations due to thermal deformation have been minimized.

Regarding claim 109, Ebinuma does not appear to explicitly describe wherein the connecting device comprises a wrung connection.

However, Schuster discloses wherein the optical element and the reinforcing element are connected to one another by a wrung connection (col. 3, lines 29-30, elements 1 and 2 are connected by wringing).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have connected the optical element to the reinforcing element by a wrung

connection as taught by Schuster with the optical element and the reinforcing element in the holding device as taught by Ebinuma since connecting an optical element to a reinforcing element by a wrung connection is common in order to provide a stable and simple mount-free connection between the elements (col. 2, lines 20-26).

8. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as modified by Schuster as applied to claim 45 above, and further in view of Brunotte et al. (WO 2002/093257, Brunotte hereinafter).

Regarding claim 50, although Ebinuma as modified by Schuster discloses a wrung connection between the optical element and the reinforcing element (Schuster, col. 29-30, elements 1 and 2 are connected by wringing), Ebinuma as modified by Schuster does not appear to explicitly describe aspheric surfaces in the region of the connection.

Brunotte discloses aspheric surfaces in the region of the connection (Fig. 2, element 144 has an aspheric shape in the region of the connection to flat (i.e. not spherical) shaped actuators 151, 152, and 153).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included aspheric surfaces as taught by Brunotte in the region of the wrung connection between the optical element and the reinforcing element in the holding device as taught by Ebinuma as modified by Schuster since aspheric surfaces are commonly used as shapes for lens elements to allow specific control of the optical characteristics based on the determined need of the imaging system.

9. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as modified by Schuster as applied to claim 51 above, and further in view of Moran et al. (US Patent No. 5,516,388, Moran hereinafter).

Regarding claim 53, although Ebinuma as modified by Schuster discloses a protective layer (Fig. 3 and col. 3, lines 47-49, a layer of SiO_2 or Al_2O_3 is provided on wringing surface 4 of optical element 1), Schuster does not appear to explicitly describe sol-gel materials.

However, Moran discloses sol-gel materials (col. 5, lines 23-50, a sol-gel solution is used to coat a surface for bonding, protection, and complete covering of an irregular surface).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included sol-gel materials as taught by Moran to form the protective layer for the optical element in the holding device as taught by Ebinuma as modified by Schuster since, as shown by Moran, sol-gel materials are commonly used to form protective layers since sol-gel materials adhere well to irregular surfaces (co. 5, lines 34-45).

10. Claims 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as applied to claim 39 above, and further in view of Holderer et al. (US Patent No. 6,392,824, Holderer hereinafter).

Regarding claim 57, although Ebinuma discloses that the optical element and the reinforcing element are connected (Figs. 1-3, 5, 7-9, and 11 and paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are connected and lens 2 is bonded to supporting member 21), Ebinuma does not appear to explicitly describe wherein the connection is through soldering.

However, Holderer discloses connection by soldering (Fig. 1 and col. 2, lines 30-42, lens 1 is soldered to mounting 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included soldering as taught by Holderer to connect the optical element and the reinforcing element in the holding device as taught by Ebinuma since soldering is commonly used to connect an optical element with a supporter for the optical element because it is a strong and reliable connection technique that allows heat transmission through the connection.

Regarding claim 58, although Ebinuma discloses wherein the optical element and the reinforcing element are connected (Figs. 1-3, 5, 7-9, and 11 and paras. [0035], [0039], [0063], and [0076], quartz lens 1 and lens supporting member 11 are connected and lens 2 is bonded to supporting member 21), Ebinuma does not appear to explicitly describe that the connection is though soldering and wherein the optical element and/or reinforcing element are provided with a protective layer in the region of the soldering connection.

However, Holderer discloses connection by soldering with a protection layer in the region of the soldering connection (Fig. 1 and col. 2, lines 30-46, lens 1 is soldered

to mounting 2 and protection layer 13 and protection layer 23 protect the lens 1 and mounting 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included soldering as a connection with a protection layer in the region of the soldering connection as taught by Holderer to connect the optical element and the reinforcing element in the holding device as taught by Ebinuma since soldering is commonly used to connect an optical element with a supporter for the optical element because it is a strong and reliable connection technique that allows heat transmission through the connection.

11. Claims 63-64 and 67-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as applied to claims 39 and 60 above, and further in view of Bruning et al. (US Patent No. 5,488,514, Bruning hereinafter).

Regarding claim 63, although Ebinuma discloses a reinforcing element is held inside a mount (Figs. 1-3, 5, 7-9, and 11, alloy member 11 and alloy member 21 (or supporting members) connect supporting member 3 to lenses 1 and 2 so that alloy members 11 and 21 are ring-shaped and support the surfaces of the lenses), Ebinuma does not appear to explicitly describe wherein the reinforcing element is held by an isostatic bearing.

However, Bruning discloses wherein the reinforcing element is held inside the mount by an isostatic bearing (Figs. 2, 3, and 8-10, and col. 2, lines 1-6, and col. 4, lines 27-53, flexible decoupling elements 25 form a bearing to hold the element, such as

inner seat ring 45, that supports lens 20 inside annulus 13 such that deformations of the annulus are not transferred to the optical surface of elements 20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included an isostatic bearing as taught by Bruning between the mount and reinforcing element in the holding device as taught by Ebinuma since, as shown by Bruning, an isostatic bearing that holds a reinforcing element in a mount is commonly used to minimize vibrations (col. 2, lines 1-11 and col. 4, lines 40-53).

Regarding claim 64, Ebinuma as modified by Bruning discloses wherein the isostatic bearing has a plurality of, preferably three, elastic support points between the reinforcing element and the mount (Bruning, Figs. 2-3 and col. 4, lines 27-53, the bearing is composed of flexible elements 25).

Regarding claim 67, Ebinuma as modified by Bruning discloses wherein the fastening elements act on a neutral fiber of the reinforcing element (Bruning, Figs. 2-3 and 8-10, elements 25 are arranged symmetrically so that the center of the sealing ring would be acted on).

Regarding claim 68, although Ebinuma discloses a reinforcing element and a mount with at least one elastic element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3), Ebinuma does not appear to explicitly describe wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

However, Bruning discloses wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element (Figs. 2-3 and 8-10, and col.

4, lines 27-53, flexible decoupling elements 25 are between annulus 13 and a seating ring).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included at least one elastic decoupling element as taught by Bruning between the mount and reinforcing element in the holding device as taught by Ebinuma since, as shown by Bruning, an elastic decoupling element that holds a reinforcing element in a mount is commonly used to minimize vibrations (col. 2, lines 1-11 and col. 4, lines 40-53).

Regarding claim 69, although Ebinuma discloses a reinforcing element and a mount with at least one elastic element (Figs. 1-3, 5, 7-9, and 11, elastic members 12 and 22 are arranged between members 11 and 21 and supporting member 3), Ebinuma does not appear to explicitly describe wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

However, Bruning discloses wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element (Figs. 2-3 and col. 4, lines 27-53, flexible decoupling elements 25 are between annulus 13 and a seating ring).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included at least one elastic decoupling element as taught by Bruning between the mount and reinforcing element in the holding device as taught by Ebinuma since, as shown by Bruning, an elastic decoupling element that holds a reinforcing element in a mount is commonly used to minimize vibrations (col. 2, lines 1-11 and col. 4, lines 40-53).

Regarding claim 70, Ebinuma as modified by Bruning discloses wherein the elastic decoupling element has a plurality of coupling members that rest on a spherical surface of the reinforcing element (Bruning, Figs. 3 and 8-10, and col. 4, lines 27-53, flexible elements 25 are arranged on a spherical surface of the seating ring).

12. Claims 79 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster as applied to claims 73 and 74 above, and further in view of Shibazaki (US PGPub 2001/0038500).

Regarding claims 79 and 80, Schuster does not appear to explicitly describe wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

Shibazaki discloses a manipulation device (control device 51 with actuators 50, Figs. 1-10) is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis (Figs. 1-10 and para. [0070], actuators 50 tilt or move the lens 38a axially).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a manipulation device to displace an optical element as taught by Shibazaki with an optical element in an objective as taught by Schuster since, as shown by Shibazaki, a manipulation device to displace an optical element is commonly used to correct aberrations (para. [0007]).

13. Claims 110 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as applied to claims 108 and 111 above, and further in view of Nishikawa (US PGPub 2003/0076602).

Regarding claim 110, Ebinuma does not appear to explicitly describe wherein the reinforcing element comprises the same material as the seal or gasket.

However, Nishikawa discloses wherein the reinforcing element comprises the same material as the seal or gasket (Fig. 7 and paras. [0219] and [0220], the lens holding metallic part 25 is made of metal as are diaphragms 67A-67D).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included manufacturing the reinforcing element and the seal or gasket out of the same material as taught by Nishikawa with the reinforcing element and the seal or gasket as taught by Ebinuma since forming the reinforcing element and the seal or gasket out of the same material is common in order to prevent deformations due to different thermal expansion coefficients of the material as well as to simplify the construction of the device by reducing the number of materials used during manufacturing.

Regarding claim 112, Ebinuma does not appear to explicitly describe wherein the seal or gasket comprises a diaphragm.

However, Nishikawa discloses wherein the seal or gasket comprises a diaphragm (Fig. 7 and para. [00219], diaphragms 67A-67D are provided to each lens holding metallic part 25 to attach to barrel 50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a diaphragm in a seal as taught by Nishikawa in the seal or gasket in the holding device as taught by Ebinuma since a diaphragm in a seal or gasket is common in order to control the pressure in the projection optical system to improve the environmental conditions that can negatively impact imaging (see paras. [0039] and [0219]).

14. Claim 113 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma as applied to claim 111 above, and further in view of Gaber et al. (US Patent No. 6,388,823, Gaber hereinafter).

Regarding claim 113, Ebinuma does not appear to explicitly describe wherein the seal or gasket comprises a bellows.

However, Gaber discloses wherein the seal or gasket comprises a bellows (Figs. 1-6 and 8, bellows 3 connects deformable mounting ring 2 to frame 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a bellows as taught by Gaber with the seal or gasket with the reinforcing element in a holding device as taught by Ebinuma since a bellows in a seal or gasket is common to allow adjustment of positioning of a holding member of an optical element so that imaging errors can be minimized.

Response to Arguments

15. Applicant's arguments, see page 15, filed 10/12/2010, with respect to the objection to claim 67 have been fully considered and are persuasive in light of the amendment. The objection to claim 67 has been withdrawn.

16. Applicant's arguments with respect to claims 39-71 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Siga et al. (US Patent No. 4,725,126) discloses a lens holding device with a lens holding frame with an adhesive inserted into the space between the lens and the frame.

Osterried (US PGPub 2002/0021503) discloses a matched coefficient of thermal expansion between a lens and a lens support.

Beck et al. (US PGPub 2004/0174619) discloses a bellows between a lens holding element and a bearing attached to a lens in a projection optical system.

Vogt (US Patent No. 6,798,588) discloses the same coefficient of thermal expansion for a lens and a lens carrier.

Kugler et al. (US PGPub 2005/0134972) discloses a stiffening element for a lens that has the same thermal expansion coefficient as the lens.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Riddle whose telephone number is (571)270-7538. The examiner can normally be reached on Monday- Thursday 7:00-17:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/
Primary Examiner, Art Unit 2882

/C. R./
Examiner, Art Unit 2882